

nexen®



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AIR CHAMP® PRODUCTS

User Manual



Dual Friction Plate Brakes

**Models DPB-9T, DPB-11T, DPB-13T, and
DPB-15T**



In accordance with Nexen's established policy of constant product improvement, the specifications contained in this manual are subject to change without notice. Technical data listed in this manual are based on the latest information available at the time of printing and are also subject to change without notice.

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www.nexengroup.com



WARNING

Read this manual carefully before installation and operation.

Follow Nexen's instructions and integrate this unit into your system with care.

This unit should be installed, operated and maintained by qualified personnel **ONLY**.

Improper installation can damage your system or cause injury or death.

Comply with all applicable codes.

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TABLE OF CONTENTS

Introduction	1
Installation	1
Air Connections	3
Lubrication	3
Operation	4
Parts Replacement	5
Replacement Parts	7
Parts List	7
Warranties	9

INTRODUCTION

Read this manual carefully, making full use of its explanations and instructions. The “Know How” of safe, continuous, trouble-free operation depends on the degree of your understanding of the system and your willingness to keep all components in proper operating condition. Pay particular attention to all NOTES, CAUTIONS, and WARNINGS to avoid the risk of personal injury or property damage. It is important to understand that these NOTES, CAUTIONS, and WARNINGS are not exhaustive. Nexen cannot possibly know or evaluate all conceivable methods in which service may be performed, or the possible hazardous consequences of each method. Accordingly, anyone who uses a procedure that is not recommended by Nexen must first satisfy themselves that neither their safety or the safety of the product will be jeopardized by the service method selected.

Nexen’s DPB (Dual Friction Plate) Brakes are designed to mount on shaft ends, or through shafts using a customer supplied Q.D. (Quick Detachable) Bushing. The dual friction plate design eliminates thrust loading of bearings.

INSTALLATION

NOTE: All DPB Brake installations require a O.D. (Quick Detachable) Bushing. Refer to Table 1 for O.D. Bushing Specifications.

TABLE 1
Q.D. Bushing Specifications

MODEL	BUSHING TYPE	MAX BORE	PULL-UP TIGHTENING TORQUE
DPB-9T	SK	2.375	15 ft.lbs.
DPB-11T	SF	2.875	30 ft.lbs.
DPB-13T	F	3.500	75 ft.lbs.
DPB-15T	J	4.000	112 ft.lbs.

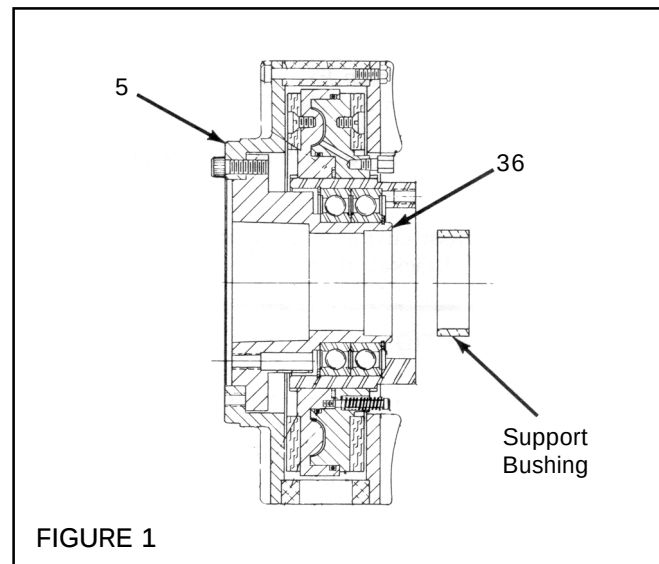
SUPPORT BUSHING

NOTE: The Support Bushing provides radial load support at the shaft, and is used when bore sizes smaller than standard are required.

1. Place DPB Brake, friction disc side up, and fully support Flange Mount Disc (Item 5) (See Fig. 1).
2. Insert Support Bushing into bore of Flanged Hub (Item 36) (See Fig. 1).
3. Apply even pressure around entire diameter of Support Bushing and press Support Bushing into Flanged Hub (Item 36).

CAUTION

Do not use a hammer to install Support Bushing. A small arbor press recommended.



BRAKE

CAUTION

Flange mounting of the DPB Brake is not recommended. Tapped holes in the DPB Brake's Splined Hub (Item 35) are used to connect the brake to a torque pin or torque arm.

1. Thoroughly inspect tapered bore of Flanged Hub (Item 36) and tapered surface of Q.D. bushing. Remove any dirt, grease, or foreign material.

NOTE: Do not use lubricants when installing O.D. bushing.

2. Install Q.D. bushing into flanged hub, aligning untapped holes in Q.D. bushing flange with tapped holes in flanged hub.

CAUTION

Do not strike Q.D. bushing to "set" it in the tapered bore.

3. Loosely insert pull-up bolts and lockwashers into Q.D. bushing and tapped holes of flanged hub.

NOTE: Do not use lubricants or thread locking compounds on pull-up bolts.

4. Insert customer supplied key into motor shaft.
5. Slide DPB Brake onto motor shaft.
6. Alternately and evenly tighten pull-up bolts to recommended torque (See Table 1).

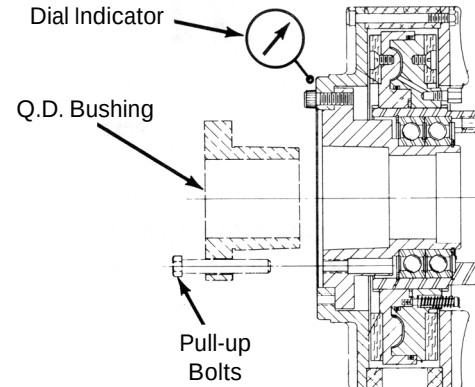


FIGURE 2

CAUTION

Do not over tighten pull-up bolts. If excessive tightening torque is applied, bursting pressure is created in flanged hub.

NOTE: Runout is minimized if a dial indicator is used as the Q.D. bushing pull-up bolts are tightened. Place contact tip of dial indicator on smooth surface of Flange Mount Disc (Item 5) to measure runout. Runout on this surface must not exceed 0.003 T.I.R. when pull-up bolts are tightened (See Fig. 2).

TORQUE ARM

1. Using Cap Screws (item 42) and Lockwashers (item 43) secure Torque Arm (Item 37) onto Splined Hub (Item 35) (See Fig. 3).
2. Tighten Cap Screws (Item 42) to 119 ft. lbs. torque.
3. Using Cap Screws (item 40) and Lock Nut (item 44), secure Extension Arm (item 37) to Torque Arm (Item 38) (See Fig. 3).
4. Tighten Lock Nut (item 44) to 70 ft. lbs. torque.
5. Using Cap Screw (Item 41) and Lock Nut (item 45), attach Extension Arm (Item 38) to Bracket (Item 39) (See Fig. 3).
6. Tighten Lock Nut (Item 45) to 200 ft. lbs. torque.
7. Using four customer supplied 7/16-UNC bolts, secure Bracket (Item 39) to a firm support.

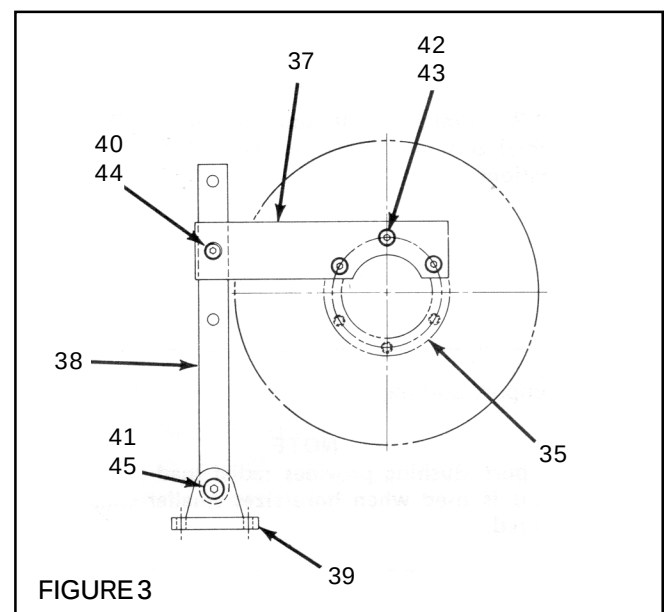


FIGURE 3



AIR CONNECTIONS

Pneumatically actuated devices require clean, pressure regulated air for maximum performance and long life. Your Nexen Distributor carries filters and regulators specifically designed to operate with Nexen DPB Brakes.

Connect air supply to Adaptor Fittings (Item 16) located on the Piston/Drive Disc (Item 2).

NOTE: Adaptor Fittings (Item 16) are 1/8 NPT.

For quick response, a short air line between the control valve and the DPB Brake is recommended. Where long air lines are required, use a quick exhaust valve.

CAUTION

Do not use rigid pipe or tubing for air line connections.

LUBRICATION

The most effective and economical way to lubricate the DPB Brake is with an air line lubricator. Available from Nexen, the lubricator injects oil into the pressurized air, forcing a constant oil mist into the air chamber.

Lubricator drip rate is properly set when oil drops form in the sight gauge every time the DPB Brake is cycled, or one full drop every ten to twenty cycles.

Locate lubricator above and within ten feet of DPB Brake.

Synthetic lubricants are not recommended, use a low viscosity petroleum base oil such as SAE 10.

For a DPB Brake cycled infrequently, apply two or three drops of oil into the air inlet every two weeks.

OPERATION

CAUTION

Prior to placing DPB Brake into service, verify that all screws are secured to the recommended torque (See Table 2).

TABLE 2
Recommended Tightening Torques

DESCRIPTION	DPB-9T	DPB-11T	DPB-13T	DPB-15T
SHOULDER SCREWS (Item 13)	9 ft.lbs.	9 ft.lbs.	9 ft.lbs.	9 ft.lbs.
LOCKNUT (Item 20)	32 ft.lbs.	70 ft.lbs.	70 ft.lbs.	70 ft.lbs.
CAP SCREW (Item 21)	48 ft.lbs.	48 ft.lbs.	119 ft.lbs.	119 ft.lbs.
CAP SCREW (Item 42)	119 ft.lbs.	119 ft.lbs.	119 ft.lbs.	119 ft.lbs.
LOCKNUT (Item 44)	70 ft.lbs.	70 ft.lbs.	129 ft.lbs.	129 ft.lbs.
LOCKNUT (Item 45)	200 ft.lbs.	200 ft.lbs.	200 ft.lbs.	200 ft.lbs.

The DPB Brake engages when air pressure is introduced into the Cylinder/Drive Disc. Air pressure pushes the Cylinder/Drive Disc against the Flange/Mount Disc, and forces the Cylinder/Drive Disc in the opposite direction.

This engages the Friction Facings with the friction surfaces of the Flange Mount Disc and Friction Disc.

Torque is transmitted through the Cylinder/Drive Disc and Piston/Drive Disc to the Splined Hub attached to the Torque Arm.

Heat generated at the friction surfaces is dissipated by windage created by fins on the Flange Mount Disc and Friction Disc.

When air is exhausted from the cylinder, return springs pull the piston to a disengaged position.

TABLE 3
Maximum Recommended Operating Speeds

MODEL	RPMS
DPB-9T	2200
DPB-11T	1800
DPB-13T	1200
DPB15T	900



WARNING

The outer assembly of the DPB Brake rotates. A guard that will not restrict the flow of cooling air around the brake must be installed if the DPB Brake is installed in an area where injury to an operator could occur.



WARNING

Never exceed maximum recommended operating speeds (See Table 3).

PARTS REPLACEMENT

CAUTION

The Nexen DPB Brake has been balanced at the factory. During disassembly, mark components with chalk alignment marks to insure correct alignment and balance as the DPB Brake is reassembled (See Fig. 4).

When reassembling the Nexen DPB Brake, make sure all screws are tightened to the recommended torque (See Table 2).

FRICTION FACING (Item 4)

Inspect Friction Facings for wear, and replace when they are approximately 9/32" thick. Friction Facings can be replaced without removing DPB Brake from motor shaft.

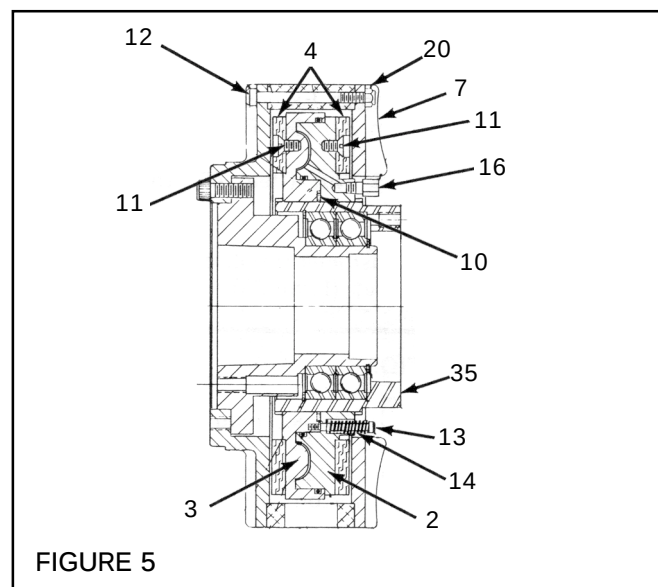
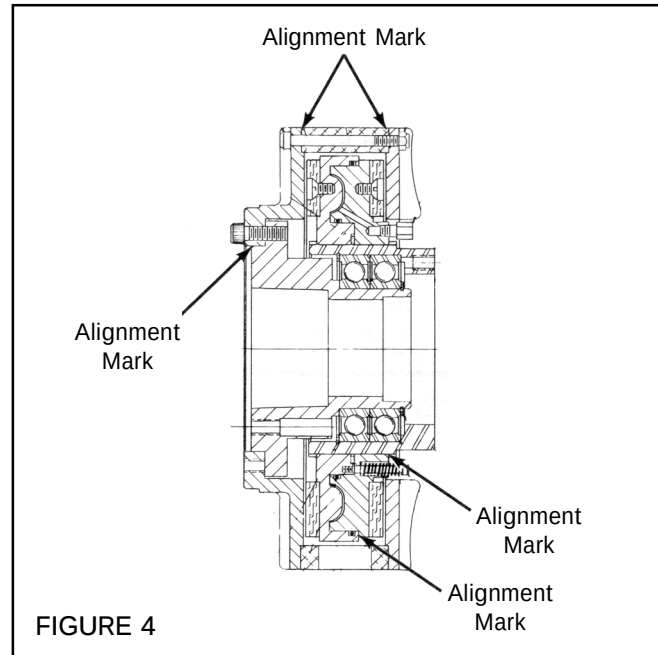
1. Disconnect air supply lines from Adaptor Fittings (Item 16).
2. Remove Cap Screws (Item 42), Lockwashers (Item 43), and swing Torque Arm (Item 37) clear of DPB Brake.
3. Remove Cap Screws (Item 12) and Locknuts (Item 20) (See Fig. 5).
4. Remove Friction Disc (Item 7) (See Fig. 5).
5. Remove Shoulder Screws (Item 13) and Springs (Item 14) (See Fig. 5).
6. Slide Piston/Drive Disc (Item 2) off Splined Hub (Item 35) (See Fig. 5).
7. Remove Retaining Ring (Item 10) (See Fig. 5).



WARNING

Special attention should be exercised when working with retaining rings. Always wear safety goggles when working with spring or tension loaded fasteners or devices.

8. Slide Cylinder/Drive Disc (item 3) off Splined Hub (Item 35) (See Fig. 5).
9. Remove Machine Screws (Item 11), and replace worn Friction Facings (item 4) (See Fig. 5).



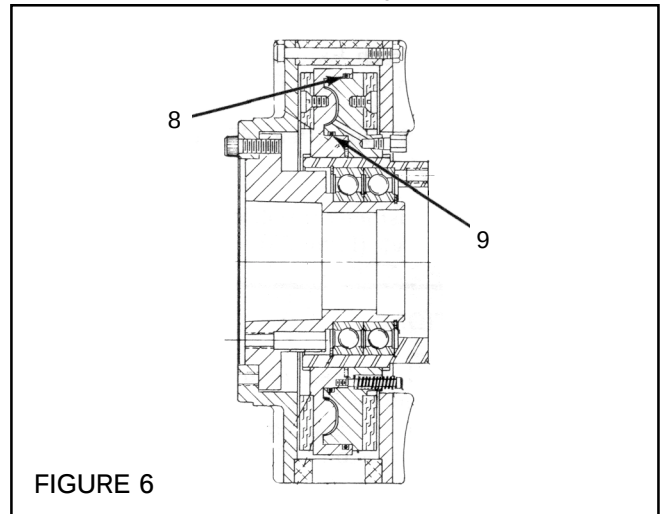
NOTE: On some models of the DPB Brake, the Machine Screws (Item 11) are assembled with a green anaerobic thread locking compound. If removal is difficult, strike end of screwdriver with a hammer to break crystalline structure of locking compound before attempting to remove screws. Machine Screws (Item 11) furnished with new Friction Facings have a locking patch and do not require the use of a thread locking compound.

10. Reverse Steps 1 through 8 to reassemble the DPB Brake, noting chalk alignment marks, and tighten all screws to recommended torque (See Table 2).

O-RINGS (Items 8 & 9)

Replace O-rings (Items 8 & 9) if there are noticeable air leaks or loss of torque.

1. Proceed with Steps 1 through 8 for Friction Facing replacement.
2. Remove O-rings (Items 8 & 9) and clean o-ring contact surfaces (See Fig. 6).
3. Lubricate new O-rings (Items 8 & 9) and o-ring contact surfaces with O-ring lubricant.
4. Install new O-rings.
5. Reverse Step 1 to reassemble DPB Brake, noting chalk alignment marks, and tighten all screws to recommended torque (See Table 2).



BEARINGS (Item 25)

DPB Brake Bearings (Item 25) are prelubricated, sealed, and do not require further lubrication.

1. Disconnect air supply lines from Adaptor Fittings (Item 16).
2. Remove Cap Screws (Item 42), Lockwashers (Item 43), and swing Torque Arm (Item 37) clear of DPB Brake.
3. Loosen Q.D. Bushing.
 - a. Remove Q.D. Bushing pull-up bolts and lockwashers.
 - b. Insert pull-up bolts into tapped Q.D. bushing removal holes and progressively tighten each one until Flanged Hub (Item 36) is loose on Q.D. bushing.
4. Wedge a screwdriver into saw cut in Q.D. bushing to loosen Q.D. bushing from shaft and remove DPB Brake.
5. Proceed with Steps 3 through 8 for Friction Facing replacement.
6. Remove Cap Screws (Item 21) (See Fig. 7).
7. Separate Flange Mount Disc (Item 5) from Flanged Hub (Item 36) and Splined Hub (Item 35) (See Fig. 7).
8. Remove Retaining Ring (Item 27) (See Fig. 7).



WARNING

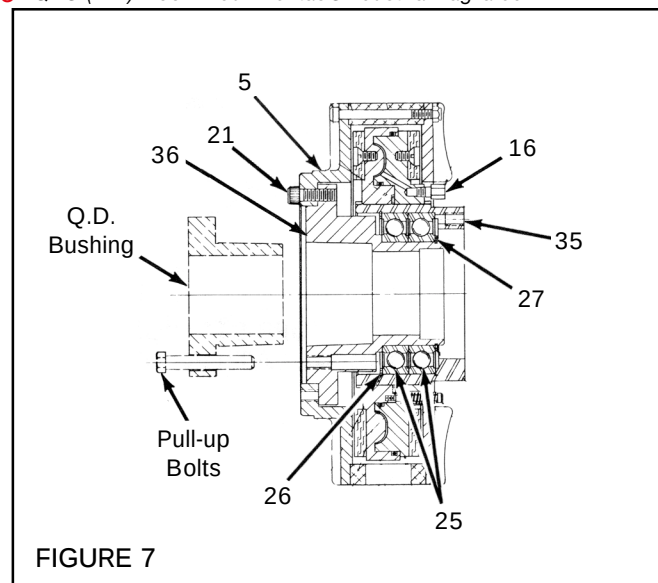
Special attention should be exercised when working with retaining rings. Always wear safety goggles when working with spring or tension loaded fasteners or devices.

(continued...)

9. Fully supporting Splined Hub (Item 35), press Flanged Hub (Item 36) out of Bearings (Item 25) (See Fig. 7).
10. Remove Retaining Ring (Item 26) (See Fig. 7).
11. Fully supporting Splined Hub (Item 35), press Bearings (Item 25) out of Splined Hub (See Fig. 7).
12. Clean bearing contact surfaces of Flanged Hub (Item 36), and Splined Hub (Item 35) with safety solvent.
13. Press new Bearings (Item 25) into Splined Hub (Item 35) (See Fig. 7).

NOTE: When installing new bearings, carefully align bearing O.D. with bore of splined hub. Apply Loctite 601 or equivalent to outer race of new bearings.

14. Install Retaining Ring (Item 26) (See Fig. 7).
15. Press Flanged Hub (Item 36) into Bearings (Item 25) and Splined Hub (Item 35) (See Fig. 7).



16. Install Retaining Ring (Item 27) (See Fig. 7).
17. Reverse Steps 1 through 7 to reassemble DPB Brake, noting chalk alignment marks, and tighten all screws to recommended torque (See Table 2).

REPLACEMENT PARTS

The item or balloon number for all Nexen products is used for part identification on all product parts lists, product price lists, unit assembly drawings, bills of materials, and instruction manuals.

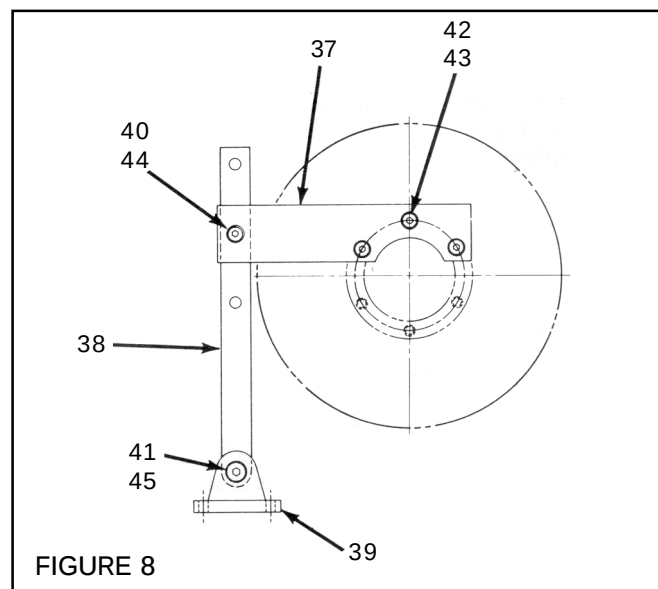
When ordering replacement parts, specify model designation, item number, part description, and quantity. Purchase replacement parts through your local Nexen Distributor.

PARTS LIST

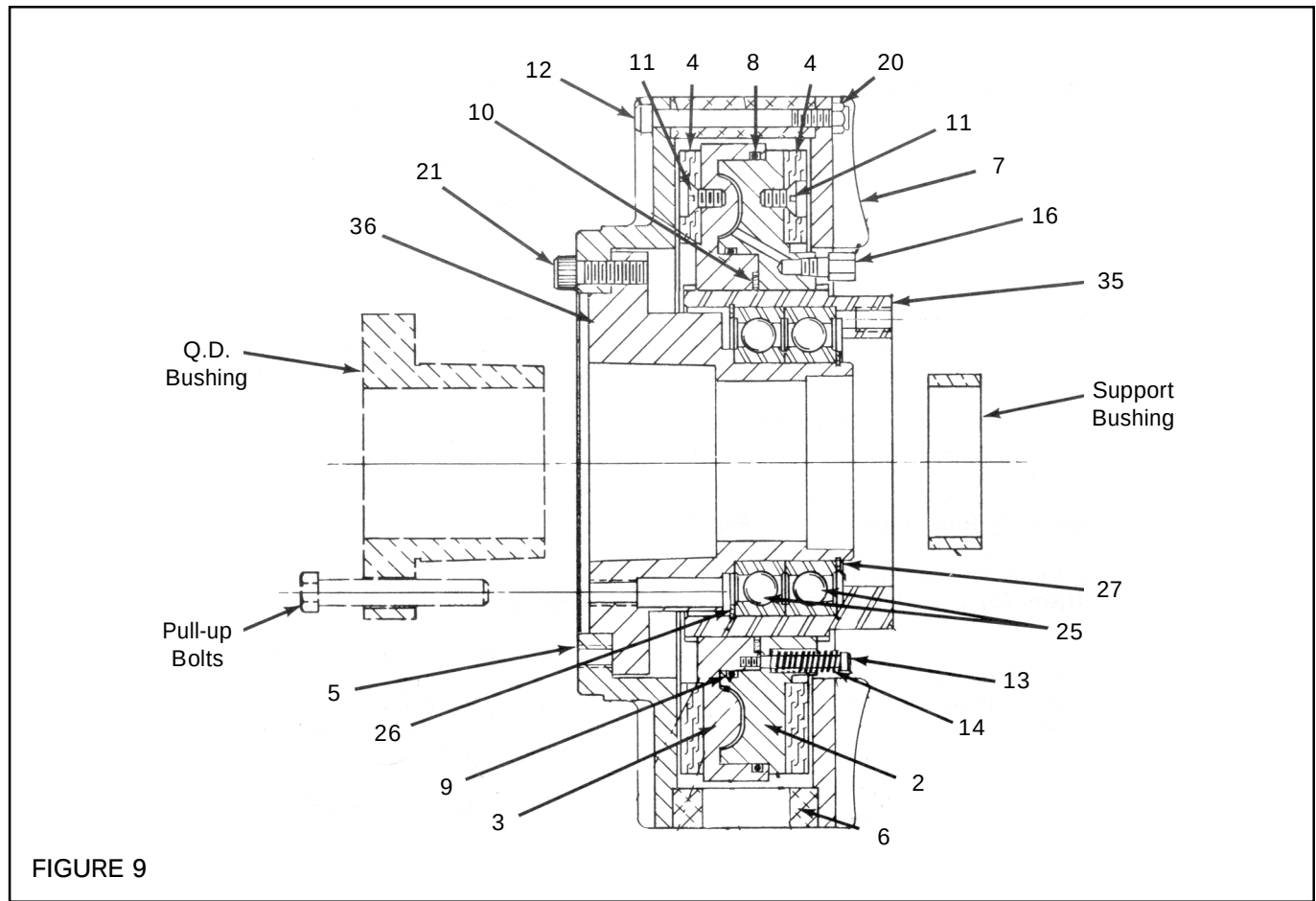
TORQUE ARM

ITEM	DESCRIPTION	QTY.
37	Arm, Torque	1
38	Bar, Extension	1
39	Bracket	1
40	Screw, Cap	1
41	Screw, Cap	1
42	Screw, Cap	3
43 ¹	Lockwasher	3
44 ¹	Nut, Lock	1
45	Nut, Lock	1

¹ Qty. 4: DPB-15T



DPB BRAKE



ITEM	DESCRIPTION	QTY.
2	Piston/Drive Disc	1
3	Cylinder/Drive Disc	1
4	Facing, Friction	2
5	Disc, Flange Mount	1
6	Housing	1
7	Disc, Friction	1
8	O-ring (Large)	1
9	O-ring (Small)	1
10	Ring, Retaining	1
11	Screw, Machine	16
12	Screw, Cap	*
13	Screw, Shoulder	**
14	Spring	**
15	Fitting, Adapter	2

ITEM	DESCRIPTION	QTY.
20	Nut, Lock	*
21	Screw, Cap	6
25	Bearing	2
26	Ring, Retaining	1
27	Ring, Retaining	1
35	Hub, Splined	1
36	Hub, Flanged	1

MODEL	*QTY.	**QTY.
DPB-9T	6	4
DPB-9T	6	6
DPB-9T	8	8
DPB-9T	10	8



WARRANTIES

Warranties

Nexen warrants that the Products will be free from any defects in material or workmanship for a period of 12 months from the date of shipment. NEXEN MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, AND ALL IMPLIED WARRANTIES, INCLUDING WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. This warranty applies only if (a) the Product has been installed, used and maintained in accordance with any applicable Nexen installation or maintenance manual for the Product; (b) the alleged defect is not attributable to normal wear and tear; (c) the Product has not been altered, misused or used for purposes other than those for which it was intended; and (d) Buyer has given written notice of the alleged defect to Nexen, and delivered the allegedly defective Product to Nexen, within one year of the date of shipment.

Exclusive Remedy

The exclusive remedy of the Buyer for any breach of the warranties set out above will be, at the sole discretion of Nexen, a repair or replacement with new, serviceably used or reconditioned Product, or issuance of credit in the amount of the purchase price paid to Nexen by the Buyer for the Products.

Limitation of Nexen's Liability

TO THE EXTENT PERMITTED BY LAW NEXEN SHALL HAVE NO LIABILITY TO BUYER OR ANY OTHER PERSON FOR INCIDENTAL DAMAGES, SPECIAL DAMAGES, CONSEQUENTIAL DAMAGES OR OTHER DAMAGES OF ANY KIND OR NATURE WHATSOEVER, WHETHER ARISING OUT OF BREACH OF WARRANTY OR OTHER BREACH OF CONTRACT, NEGLIGENCE OR OTHER TORT, OR OTHERWISE, EVEN IF NEXEN SHALL HAVE BEEN ADVISED OF THE POSSIBILITY OR LIKELIHOOD OF SUCH POTENTIAL LOSS OR DAMAGE. For all of the purposes hereof, the term "consequential damages" shall include lost profits, penalties, delay damages, liquidated damages or other damages and liabilities which Buyer shall be obligated to pay or which Buyer may incur based upon, related to or arising out of its contracts with its customers or other third parties. In no event shall Nexen be liable for any amount of damages in excess of amounts paid by Buyer for Products or services as to which a breach of contract has been determined to exist. The parties expressly agree that the price for the Products and the services was determined in consideration of the limitation on damages set forth herein and such limitation has been specifically bargained for and constitutes an agreed allocation of risk which shall survive the determination of any court of competent jurisdiction that any remedy herein fails of its essential purpose.

Limitation of Damages

In no event shall Nexen be liable for any consequential, indirect, incidental, or special damages of any nature whatsoever, including without limitation, lost profits arising from the sale or use of the Products.

Warranty Claim Procedures

To make a claim under this warranty, the claimant must give written notice of the alleged defect to whom the Product was purchased from and deliver the Product to same within one year of the date on which the alleged defect first became apparent.

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